UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,959	03/31/2004	Kutay F. Ustuner	2004P01660US	8319

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Siemens Corporation
Intellectual Property Department
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EXAMINER
LAMPRECHT, JOEL

ART UNIT	PAPER NUMBER
3737	

MAIL DATE	DELIVERY MODE
08/18/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _5/15/09_.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under _Ex parte Quayle_, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-28 and 30-34_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-28, 30-34_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

Claims 1-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hall

et al in view of Hollman et al (Coherence Factor of Speckle from a Multi-Row Probe).

Hall discloses a method for ultrasound imaging through obtaining data from transducers

across a receive aperture (Col 1 Line 60-Col 2 Line 15), determining coherence factor

(Col 7 Line 10-60), calculating a ratio of coherent to incoherent sum (Col 7 Line 60-Col

8 Line 40, Col 2 Line 40- Col 3 Line 35), phase variance and calculating coherence

factor as a function of time/phase delay (Col 7 Line 45-60, Col 6 Line 1-45). The

methods also describe setting transmit parameters; receive parameters, and the

individual firings of transducer elements (how many transmit, when they transmit) as a

function of coherence (Col 7 Line 13- Col 9 Line 20, Col 6 Line 1-45, Col 4 Line 15-55).

Mathematical analysis of data is propagated as a function of coherence factor and

optionally image filtering can be performed as a function of coherence factor (Col 8 Line

40-Col 9 Line 5, Col 6 Line 60- Col 7 Line 12). Hall discloses an array, a processor for

determining CF across the array (Col 7 Line 45-Col 8 Line 15), synthesis of images

through multiplication by the coherence factor (Col 4 Line 65-Col 5 Line 10, Col 8 Line

40 – Col 9 line 40), wherein the image processor is able to set the size of the beams,

and dynamically sum the range, phase, and energy based on coherence (Col 3 Line 60-

Col 4 Line 55, Col 5 Line 20 – Col 6 Line 45).

Hall et al discloses all that is listed above but fails to explicitly set a beamforming

or image forming parameter of the beams as a function of coherence. Attention is then

directed to the secondary reference by Hollman et al which discloses first that

coherence factor provides an analysis of image quality or focus quality based on phase

variance. Hollman et al conclude in their teachings that coherence factors, that is the

coherent and incoherent sums which are altered by delay before summation compared

to one another or the entire data, allow for an assessment of image quality. Phase

distortion is introduced to impact coherence factor and energy distributions as well as

provide a technique to assess coherence factor as a measure of quality. Taking into

account the disclosure of Col 1 Line 30-Col 2 Line 15 of Hall et al and the teachings of

Hollman et al it would have been obvious to one of ordinary skill in the art at the time of

the invention to have used utilized the coherence factor as a sign of image quality to

optimize the transmit and receive beams of Hall et al for the purpose of providing the

most-desired imaging data over the imaging procedure.

Claims 30-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Hall et al in view of Hollman et al and in further view of Rigby (US 5,910,115). Hall et al

in view of Hollman et al disclose all that is listed above but fail to disclose the setting of

a nonlinear map as a function of coherence factors, rather Hall et al focus on filtering

based on coherence data analysis (Col 2 Line 40-55). Attention is directed to the

secondary reference by Rigby which discloses the use of coherence factors to control

setting of a nonlinear map or dynamic range (Figure 4, Col 5 Line 25-Col 6 Line 15). It

would have been obvious to one of ordinary skill in the art at the time of the invention to

have included the teachings of Rigby in the methods of Hollman et al and Hall et al for

the purpose of providing automated compensation and filtering for dynamic

beamforming data.

Response to Arguments

Applicant's arguments filed 5/15/09 have been fully considered but they

are not persuasive. Regarding the argument that Hollman et al and Hall et al fail to set

properties as a function of coherence factor, Examiner respectfully disagrees. Hollman

et al discloses that through measurement of coherence, image quality can be

determined and subsequently modified via modification of send/receive parameters

(beamforming) via phase correction (distortion/beam steering) and modification of the

geometry of the aperture/focal range used in imaging. Regarding the argument that

Rigby does not filter based on coherence, Examiner respectfully disagrees as the

procedure of Rigby is disclosed in order to set up a filter based on coherence in US

imaging and map the coherence factor (thus producing a map based on coherence

factor). Hollman et al use the variations in phase to modify and otherwise manipulate

coherence factor. This is an iterative process in which validation data is produced

based on modifications to subsequent testing based on coherence data produced (as is

common in the scientific method) as a sign of image quality.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to JOEL M. LAMPRECHT whose telephone number is

(571)272-3250. The examiner can normally be reached on Monday-Friday 8:30AM-

5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Brian L. Casler can be reached on (571)272-4956. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JML

/BRIAN CASLER/

Supervisory Patent Examiner, Art Unit 3737